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In re Application of:)
Naci BASTURK) Atty. Docket: ICB0098
Serial No. 09/783,286)
Filed: February 15, 2001) Examiner: QI, Zhi Qiang
For: DISPLAY ASSEMBLY WITH)
CONTRAST INVERSION)
INCLUDING TWO SUPERPOSED)
DISPLAY DEVICES)

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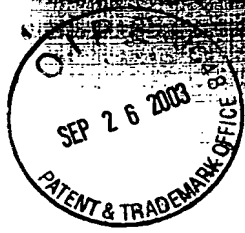
Documents submitted July 7, 2003

1. Check # 2218 in the amount of \$84.00
2. Amendment Transmittal Letter in duplicate
3. Amendment C (19 pages), with copy of a Two (2) page attachment from Random House Webster's College Dictionary.

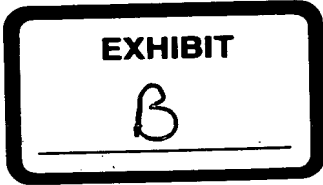
Dkt. # ICB0098 Due: July 7, 2003 (JUS/lc)

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AMENDMENT (C) AFTER FINAL

BOX: Fee Amendment
Assistant Commissioner for Patents
Washington, D. C. 20231

Sir:

Applicant respectfully requests that this amendment after final with remarks be entered in accordance with 37 C.F.R. 1.114(b) because the Applicant believes that this amendment with remarks addresses all outstanding issues raised by the Examiner in the Final Office Action dated April 9, 2003. Applicant asserts that after the amendment after final has been entered that all remaining claims in the application will be allowable. Therefore, please amend the above-captioned application as follows:

IN THE CLAIMS:

Please cancel claims 7 and 17 without prejudice.

Please amend claims 1, 9, 13 and 19, and add new claims 20 and 21 as follows.

1. (Presently amended) A display assembly with two superposed contrast inversion display devices including a first display device, a second active display device having a double structure, one structure being formed by a first contrast inversion display device provided by a liquid crystal dot matrix display cell or by a digit liquid crystal display cell, the liquid crystals of the one structure being confined in a space delimited by two transparent substrates and having two switching states, and the other structure being formed by a second contrast inversion display device provided by a liquid crystal optical valve, the liquid crystals of the other structure being confined in a space delimited by two transparent substrates and having at least two switching states and control means allowing an appropriate voltage to be selectively applied to the display cell and optionally to all or part of the valve to cause each liquid crystal to switch from one state to another, wherein the second active display includes only two polarisers such that a first absorbent or reflective front polariser is arranged at the front of the display cell and in that a second back polariser, crossed with the front polariser or parallel thereto, is arranged at the back of the valve so that when the display cell is switched to display at least one item of data, the total or partial switching of the valve, from one state to another, inverts the contrast of the data displayed from a light appearance to a dark appearance or vice versa, wherein the first display device has a dark shade and the back polariser is a reflective polariser, and wherein the first contrast inversion display device and the second contrast inversion display device are superposed.

2. (Previously amended) A display assembly according to claim 1, wherein the switching of the valve from one state to another also allows either the first display only to be made visible, or for the first display to be totally hidden by a mirror mask or by a black mask when the display cell is not switched.

3. (Original) A display assembly according to claim 1, wherein the valve includes at least two distinct zones with opposite switching mode, so that two types of data of the second display can be observed with a contrast inversion.

4. (Previously amended) A display assembly according to claim 1, wherein the liquid crystals of said display assembly are twisted nematic liquid crystals with either positive or negative anisotropy, which may be identical or different in the display cell and in the valve.

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Previously amended) A display assembly according to claim 1, wherein the first display device is selected from among an analogue device, a digital device, a combination of an analogue device and a digital device, and a decorative element.

9. (Currently amended) A display assembly according to claim 207, wherein the digital part of the first display device and the second display device have the same structure.

10. (Previously twice amended) A timepiece including a case closed by a crystal and a back cover in which a clockwork movement associated with at least one display device is housed, characterized in that said display device is formed by a display assembly according to claim 1, said first display device essentially displaying time related data and said second display device displaying

time related data complementary to the preceding data or non time related data of sensor systems, or alphanumerical processing systems, integrated in the case of the timepiece.

11. (Original) A timepiece according to claim 10, wherein said first display device includes a dial above which move an hour hand, a minute hand and a second hand.

12. (Previously amended) A timepiece according to claim 10, wherein the second display is combined with the crystal.

13. (Presently amended) A display assembly with two superposed contrast inversion display devices including a first display device, a second active display device having a double structure, one structure being formed by a first contrast inversion display device provided by a liquid crystal dot matrix display cell or by a digit liquid crystal display cell, the liquid crystals of the one structure being confined in a space delimited by two transparent substrates and having two switching states, and the other structure being formed by a second contrast inversion display device provided by a liquid crystal optical valve, the liquid crystals of the other structure being confined in a space delimited by two transparent substrates and having at least two switching states and control means allowing an appropriate voltage to be selectively applied to the display cell and optionally to all or part of the valve to cause each liquid crystal to switch from one state to another, wherein the second active display includes only two polarisers such that a first absorbent or reflective front polariser is arranged at the front of the display cell and in that a second back polariser, crossed with the front polariser or parallel thereto, is arranged at the back of the valve so that when the display cell is switched to display at least one item of data, the total or partial switching of the valve, from one state to another, inverts the contrast of the data displayed from a light appearance to a dark appearance or vice versa, wherein the first display device has a light shade and the back polariser is an absorbent polariser, and wherein the first contrast inversion display device and the second contrast inversion display device are superposed.

14. (Previously added) A display assembly according to claim 13, wherein the switching of the valve from one state to another also allows either the first display only to be made visible, or for the first display to be totally hidden by a mirror mask or by a black mask when the display cell is not switched.

15. (Previously added) A display assembly according to claim 13, wherein the valve includes at least two distinct zones with opposite switching mode, so that two types of data of the second display can be observed with a contrast inversion.

16. (Previously added) A display assembly according to claim 13, wherein the liquid crystals of said display assembly are twisted nematic liquid crystals with either positive or negative anisotropy, which may be identical or different in the display cell and in the valve.

17. (Canceled)

— 18. (Previously added) A display assembly according to claim 13, wherein the first display device is selected from among an analogue device, a digital device, a combination of an analogue device and a digital device, and a decorative element.

19. (Currently amended) A display assembly according to claim 21+7, wherein the digital part of the first display device and the second display device have the same structure.

20. (NEW) A display assembly with two superposed contrast inversion display devices including a first display device, a second active display device having a double structure, one structure being formed by a first contrast inversion display device provided by a liquid crystal dot matrix display cell or by a digit liquid crystal display cell, the liquid crystals of the one structure

being confined in a space delimited by two transparent substrates and having two switching states, and the other structure being formed by a second contrast inversion display device provided by a liquid crystal optical valve, the liquid crystals of the other structure being confined in a space delimited by two transparent substrates and having at least two switching states and control means allowing an appropriate voltage to be selectively applied to the display cell and optionally to all or part of the valve to cause each liquid crystal to switch from one state to another, wherein a first absorbent or reflective front polariser is arranged at the front of the display cell and in that a second back polariser, crossed with the front polariser or parallel thereto, is arranged at the back of the valve so that when the display cell is switched to display at least one item of data, the total or partial switching of the valve, from one state to another, inverts the contrast of the data displayed from a light appearance to a dark appearance or vice versa, wherein the first display device has a dark shade and the back polariser is a reflective polariser, and wherein the first contrast inversion display device and the second contrast inversion display device are superposed, and the transparent substrates opposite the display cell and the valve are combined in a single transparent substrate.

21. (NEW) A display assembly with two superposed contrast inversion display devices including a first display device, a second active display device having a double structure, one structure being formed by a first contrast inversion display device provided by a liquid crystal dot matrix display cell or by a digit liquid crystal display cell, the liquid crystals of the one structure being confined in a space delimited by two transparent substrates and having two switching states, and the other structure being formed by a second contrast inversion display device provided by a liquid crystal optical valve, the liquid crystals of the other structure being confined in a space delimited by two transparent substrates and having at least two switching states and control means allowing an appropriate voltage to be selectively applied to the display cell and optionally to all or part of the valve to cause each liquid crystal to switch from one state to another, wherein a first absorbent or reflective front polariser is arranged at the front of the display cell and in that a second back polariser, crossed with the front polariser or parallel thereto, is arranged at the back of the valve

so that when the display cell is switched to display at least one item of data, the total or partial switching of the valve, from one state to another, inverts the contrast of the data displayed from a light appearance to a dark appearance or vice versa, wherein the first display device has a light shade and the back polariser is an absorbent polariser, and wherein the first contrast inversion display device and the second contrast inversion display device are superposed, and the transparent substrates opposite the display cell and the valve are combined in a single transparent substrate.

REMARKS

As an initial matter, Applicant points out that the finality of the Office Action dated April 9, 2003, is premature and should be withdrawn in accordance with MPEP 706.07(d). Specifically, the finality of the April 9th Office Action is premature because the Examiner made a new grounds of rejection on claim 7 that was neither necessitated by Applicant's amendment to the claim nor based on information submitted by the Applicant in an Information Disclosure Statement (IDS). MPEP 706.07(a). In fact, the Examiner previously stated that claim 7 contained allowable subject matter (Office Action, dated August 30, 2002, page 6, lines 15-18). Applicant acknowledged the Examiner's determination (see Amendment (B), page 7, lines 2-4). In the April 9th Office Action, the Examiner rejected claim 7 implying that the subject matter is obvious (Office Action, dated April 9, 2003, page 5, line 19 to page 6, line 1). This new grounds of rejection was neither necessitated by Applicant's amendment nor based on information provided by the Applicant in an IDS; therefore, the finality is improper and should be withdrawn. MPEP 706.07 (a) and (d).

In a telephone conversation with Examiner Mike Qi on April 15th, 2003, the Examiner was made aware of this finality error. The Examiner agreed that the finality of the April 9th Office Action was improper and should be withdrawn.

— Claims 7 and 17 have been canceled without prejudice. New claims 20 and 21 have been added, wherein claim 20 recites the subject matter of claim 7 in independent form and claim 21 recites the subject matter of claim 17 in independent form. Therefore, new claims 20 and 21 have the same scope as claims 7 and 17, respectively, and do not represent limiting amendments. Claims 9 and 19 have been amended so as to depend upon new claims 20 and 21 respectively.

Claims 1 and 13 have been amended to recite "wherein the second active display includes only two polarisers such that a first absorbent or reflective front polariser is arranged at the front of the display cell and in that a second back polariser, crossed with the front polariser or parallel thereto, is arranged at the back of the valve" as supported by Figure 6 and page 7, lines 23-33, of the instant specification.

The present amendment adds no new matter to the application and raises no new issues.

The Invention

The present invention pertains broadly to a display assembly, such as would be used in a timepiece, having two superposed display devices for displaying information by inverting the contrast of all or part of the information displayed between the two display devices. Specifically, in a first embodiment in accordance with the present invention, a display assembly with two superposed contrast inversion display devices is claimed that includes a first display device, a second active display device having a double structure, one structure being formed by a first contrast inversion display device provided by a liquid crystal dot matrix display cell or by a digit liquid crystal display cell, the liquid crystals of the one structure being confined in a space delimited by two transparent substrates and having two switching states, and the other structure being formed by a second contrast inversion display device provided by a liquid crystal optical valve, the liquid crystals of the other structure being confined in a space delimited by two transparent substrates and having at least two switching states and control means allowing an appropriate voltage to be selectively applied to the display cell and optionally to all or part of the valve to cause each liquid crystal to switch from one state to another, wherein a first absorbent or reflective front polariser is arranged at the front of the display cell and in that a second back polariser, crossed with the front polariser or parallel thereto, is arranged at the back of the valve so that when the display cell is switched to display at least one item of data, the total or partial switching of the valve, from one state to another, inverts the contrast of the data displayed from a light appearance to a dark appearance or vice versa, wherein the first display device has a dark shade and the back polariser is a reflective polariser, and wherein the first contrast inversion display device and the second contrast inversion display device are superposed.

In accordance with a second embodiment of the invention, a display assembly with two superposed contrast inversion display devices is claimed that includes a first display device, a second active display device having a double structure, one structure being formed by a first contrast inversion display device provided by a liquid crystal dot matrix display cell or by a digit liquid crystal display cell, the liquid crystals of the one structure being confined in a space delimited by two transparent substrates and having two switching states, and the other structure being formed by a

second contrast inversion display device provided by a liquid crystal optical valve, the liquid crystals of the other structure being confined in a space delimited by two transparent substrates and having at least two switching states and control means allowing an appropriate voltage to be selectively applied to the display cell and optionally to all or part of the valve to cause each liquid crystal to switch from one state to another, wherein the second active display includes only two polarisers such that a first absorbent or reflective front polariser is arranged at the front of the display cell and in that a second back polariser, crossed with the front polariser or parallel thereto, is arranged at the back of the valve so that when the display cell is switched to display at least one item of data, the total or partial switching of the valve, from one state to another, inverts the contrast of the data displayed from a light appearance to a dark appearance or vice versa, wherein the first display device has a light shade and the back polariser is an absorbent polariser, and wherein the first contrast inversion display device and the second contrast inversion display device are superposed.

In accordance with a third embodiment of the invention, a display assembly with two superposed contrast inversion display devices is claimed that includes a first display device, a second active display device having a double structure, one structure being formed by a first contrast inversion display device provided by a liquid crystal dot matrix display cell or by a digit liquid crystal display cell, the liquid crystals of the one structure being confined in a space delimited by two transparent substrates and having two switching states, and the other structure being formed by a second contrast inversion display device provided by a liquid crystal optical valve, the liquid crystals of the other structure being confined in a space delimited by two transparent substrates and having at least two switching states and control means allowing an appropriate voltage to be selectively applied to the display cell and optionally to all or part of the valve to cause each liquid crystal to switch from one state to another, wherein the second active display includes only two polarisers such that a first absorbent or reflective front polariser is arranged at the front of the display cell and in that a second back polariser, crossed with the front polariser or parallel thereto, is arranged at the back of the valve so that when the display cell is switched to display at least one item of data, the total or partial switching of the valve, from one state to another, inverts the contrast of the data displayed from a

light appearance to a dark appearance or vice versa, wherein the first display device has a dark shade and the back polariser is a reflective polariser, and wherein the first contrast inversion display device and the second contrast inversion display device are superposed, and the transparent substrates opposite the display cell and the valve are combined in a single transparent substrate.

In accordance with a fourth embodiment of the present invention, a display assembly with two superposed contrast inversion display devices is claimed that includes a first display device, a second active display device having a double structure, one structure being formed by a first contrast inversion display device provided by a liquid crystal dot matrix display cell or by a digit liquid crystal display cell, the liquid crystals of the one structure being confined in a space delimited by two transparent substrates and having two switching states, and the other structure being formed by a second contrast inversion display device provided by a liquid crystal optical valve, the liquid crystals of the other structure being confined in a space delimited by two transparent substrates and having at least two switching states and control means allowing an appropriate voltage to be selectively applied to the display cell and optionally to all or part of the valve to cause each liquid crystal to switch from one state to another, wherein a first absorbent or reflective front polariser is arranged at the front of the display cell and in that a second back polariser, crossed with the front polariser or parallel thereto, is arranged at the back of the valve so that when the display cell is switched to display at least one item of data, the total or partial switching of the valve, from one state to another, inverts the contrast of the data displayed from a light appearance to a dark appearance or vice versa, wherein the first display device has a light shade and the back polariser is an absorbent polariser, and wherein the first contrast inversion display device and the second contrast inversion display device are superposed, and the transparent substrates opposite the display cell and the valve are combined in a single transparent substrate.

Various other embodiments in accordance with the present invention are the subject of the dependant claims. One advantage of the embodiments in accordance with the present invention is that a display assembly, such as would be used in a timepiece, is provided that has two superposed display devices that display dark indicia on a light background or light indicia on a dark .

background thereby providing an aesthetically pleasing and easy to read information display of various data, such as time data and the like.

The Rejection

Claims 1, 4, 8, 10-13, 16 and 18 stand rejected under 35 U.S.C. 103(a) as unpatentable over "Applicant's admitted prior art" (Applicant's specification, page 1, line 16 to page 5, line 2, Figure 1A). Claims 2, 3, 7, 9, 14, 15, 17 and 19 stand rejected under 35 U.S.C. 103(a) as unpatentable over Applicant's admitted prior art in view of Masafumi et al. (EP 0930522).

Applicant respectfully traverses the rejection and requests reconsideration of the application for the following reasons.

Applicant's Arguments Regarding Original Claim 7

As an initial matter, Applicant would like to address new claims 20 and 21 because they correspond to the subject matter of claims 7 and 17 written in an independent format. Applicant asserts that neither the Applicant's Admitted prior art, nor the Musafumi et al. reference teach, or even suggest, that "the transparent substrates opposite the display cell and the valve are combined in a single transparent substrate" as recited in claims 7 and 17. Applicant points out that the Examiner asserted this position also in the Office Action dated August 30, 2002, page 6, line 16, to page 7, line 8). More specifically, the Examiner stated for the record:

"The closest references Applicant admitted prior art and EP 0930522, EP 0926574...do not disclose the display structure in which the transparent substrates opposite the cell and the valve are combined in a single transparent substrate as claimed." (emphasis added).

In other words, the Examiner concluded that the prior art of record, including the Applicant's admitted prior art and the Musafumi et al. reference did not disclose the subject matter of claim 7. Now, in the Office Action dated April 9, 2003, page 5, line 19, to page 6, line 3, the Examiner states the ambiguous conclusion that

"using transparent substrates opposite the display cell and the valve are combined in a single transparent substrate that would be conventional liquid crystal display structure, because the liquid crystal display structure uses transparent substrates to form the display device, and also can be combined into a single substrate including the cell and the valve."

Clearly the April 9th Office Action is inconsistent with the August 30th Office Action. In addition, the April 9th Office Action does not point out where in the prior art the subject matter recited in claim 7 is found.

The courts have ruled that when the PTO asserts there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such teaching or suggestion appears in the reference. In re Rijckaert, 29 U.S.P.Q.2d 1955, 1957 (Fed. Cir. 1993). In addition, the courts have held that the mere fact the prior art could be modified to make the invention would not make the modification obvious unless the prior art suggested the desirability to make the modification. In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

In this case, the present record shows that the prior art does not teach the subject matter of claims 20 and 21, originally recited in claim 7, wherein "the transparent substrates opposite the display cell and the valve are combined in a single transparent substrate." Furthermore, the Examiner's conclusory statement of obviousness in the April 9th Office Action contradicts the Examiner's reasoned statement of non-obviousness in the April 30th Office Action and lacks a showing grounded in the prior art that the proposed modification of the prior art is suggested by the prior art in accordance with Gordon at 1127. This conclusory statement is insufficient to reject the claims since it does not point to any prior art or other evidence for the suggestion that the combination, which the Examiner admitted was not found in the prior art, would in fact have been obvious in view of the prior art. In other words, the Examiner has made a legal conclusion of obviousness without any factual support that the claimed modification would have been suggested in the prior art.

For these reasons, claims 20 and 21 and dependent claims 9 and 19 are allowable as unobvious over the prior art of record.

Applicant's Arguments Regarding The Admitted Prior Art

Referring now specifically to the prior art, the Applicant's specification discusses the background of the invention from page 1, line 3 to page 5, line 2. In this discussion, Applicant discusses prior art display assemblies as shown in Figures 1A, 2A, 2B and 2C. Applicant also

discusses "modifications which may be made to the display assembly of the prior art" (page 6, lines 21-22); however, the embodiments shown in Figures 3A, 3B, 4A, 4B, 5A and 5B are not admitted to be prior art or obvious to those skilled in the art. Applicant's characterization of the subject matter of Figures 3A, 3B, 4A, 4B, 5A and 5B as "modifications which may be made to the display assembly of the prior art" does not communicate that such modifications have, in fact, been made, or that they are taught by the prior art. The discussion related to Figures 3A, 3B, 4A, 4B, 5A and 5B is solely intended to point out that further modifications leading to the subject matter of the presently claimed invention would not have been obvious.

All of the embodiments shown in Figures 1A, 2A, 2B, 2C, and, non-prior art Figures 3A, 3B, 4A, 4B, 5A and 5B include a polariser (42) sandwiched between a display cell (26) and an optical valve (28). The object of the present invention is to provide a display assembly that includes two superposed display devices allowing an inversion of contrast of one of the displays without increasing energy requirement and without requiring a complex polarizer drive (present specification, page 5, lines 3-7). In other words, the presently claimed invention does not permit the presence of a polarizer or any other structure between the display cell and the optical valve.

Specifically, the instant specification defines that "[t]he actual construction of the two superposed display devices...corresponds to what was already described with reference to Fig 1A, with the exception of intermediate polariser 42 which has been omitted (page 7, lines 3-6, emphasis added)." All of the embodiments shown in Figures 6-10 show display cell (26) superposed on optical valve (28) with no polarizer disposed in between.

Applicant's use of the term "superpose", to describe the patentable relationship between the two contrast inversion display devices is adequately described in the instant specification on page 7, lines 3-6, and is consistent with the meaning of the word. Specifically, one definition of "superpose" is one upon another (Random House Webster's college dictionary, 1991, page 1341). The word "upon" communicates the positional relationship "in or into complete or approximate contact with" (Random House Webster's college dictionary, 1991, page 1456). In all of the prior art devices, a polarizer is disposed between the display cell and the optical valve. With this

structure, it is not possible for the display cell to contact, or approximately contact, the optical valve because there is a barrier (i.e., the polarizer) in between. Therefore, given (a) the above definition of "superpose," (b) the definition of "superposed display devices" described in the specification (page 7, lines 3-6) and (c) as shown in Figures 6-10, it is clear that the phrase "two superposed contrast inversion display devices" recited in claims 1 and 13 does not allow for a polarizer to be interposed between the two contrast inversion display devices.

The Examiner's reply to Applicant's arguments in Amendment (B), page 11, lines 1-21, is to acknowledge that "the invention is that the two superposed contrast inversion display device does not have a polariser disposed between the two contrast inversion display devices, and the invention uses only two polarizers" and to imply that these limitations do not exist in the claims (Office Action, April 9, 2003, page 6, line 13, to page 7, line 2). Applicant points out that the phrase "wherein the first contrast inversion display device and the second contrast inversion display device are superposed" as recited in claims 1, 13, 20 and 21, particularly points out and distinctly claims that the first contrast inversion display device and the second contrast inversion display device are disposed "one upon another" so that these two elements are "in or into complete or approximate contact with" each other as naturally falls from the dictionary definition of the term "superposed." Such a definition of the term superposed does not read on a structure that has a polarizer interposed between the two contrast inversion display devices.

Furthermore, the embodiments recited in claims 1 and 13 specify that the second active display includes only two polarisers, which is not taught, or even suggested, by the prior art of record.

To reemphasize, claims 1 and 13 both recite a "display assembly with two superposed contrast inversion display devices." None of the embodiments disclosed in Figures 1A, 2A, 2B, 2C, 3A, 3B, 4A, 4B, 5A and 5B have "two superposed contrast inversion display devices" because each of these embodiments have a polariser (42) interposed between the display cell (26) and the optical valve (28). These embodiments all have three polarizers (40), (42) and (44) with the intermediate polarizer (42) interposed between the display cell (26) and the optical valve (28),

whereas the display assembly in accordance with the present invention uses only two polarizers, neither of which is interposed between the display cell and the optical valve. Applicant asserts that there is no teaching in the EP 0926574 document disclosing, or even suggestion, that such a modification be made. If the Examiner disagrees with Applicant's interpretation of the prior art, it is the Examiner's burden to show where in the prior art the "two superposed contrast display devices" are taught, in accordance with Rijckaert at 1957, while giving a fair reading of what the prior art reference teaches as a whole in accordance with Gordon at 1127.

Applicant's Additional Comments Regarding the EP'574 Reference

Applicant makes the following additional observations and comments regarding the prior art reference EP 0 926 574 (hereafter, the "EP'574 reference"), which is discussed in the present specification on page 1, line 16, to page 3, line 27. Specifically, Applicant's specification points out that the device disclosed by the EP'574 reference operates in either an "On state" or an "Off state," which produces contrast but it does not permit inversion of the contrast. Contrast inversion involves showing the same piece of information as either light on a dark background or dark on a light background, and that the inversion is selectable. Applicants point out that while contrast inversion using inverse addressing is known (instant specification, page 3, lines 23-27), Applicant's do not admit that application of inverse addressing to the device disclosed by the EP'574 reference would be obvious. In fact, Applicant pointed out that the use of inverse addressing in the device of the EP'574 reference would create substantial increases in power requirements that would be detrimental (instant specification, page 3, lines 23-27) and that would discourage one of ordinary skill in the art from applying inverse addressing to the device disclosed in the EP'574 reference because the energy requirements are unacceptable for a timepiece.

Applicant points out that in §0021, lines 6-10, of the EP'574 reference, it is taught that display cell (28) (of the front display assembly (24) including also the backward valve (30)) is a liquid crystal cell of the twisted nematic type whose respective external surfaces of substrates (34) and (36) are provided with crossed polarizers. In other words, there is always at least one polarizer

between the cell (28) and the valve (30), which is contrary to the structure of the present invention wherein there are no polarizers between these elements.

In addition, §0037, lines 3-6, of the EP'574 reference teaches that the optical valve (30) can be formed by a switchable reflector, including, starting from the side of crystal (22), a stack formed of a polarizer, a liquid crystal cell of the twisted nematic type (TN), and a quarter wave plate and a cholesteric film (acting together like a polarizer). Thus, the front assembly (24) described by the EP'574 reference is the same type as that shown in Figures 2A and 2B of the present application.

In summary, the EP'574 reference does not disclose, or even suggest, a "display assembly with two superposed contrast inversion display devices" as recited in claims 1, 13, 20, and 21, wherein the "second active display includes only two polarisers" as recited in claims 1 and 13, and contrast inversion as recited in claim 15.

Applicant's Arguments Regarding The Masafumi et al. Reference

The Masafumi et al. reference discloses a "liquid crystal display" device comprising a first liquid crystal cell (16) and a second liquid crystal cell (18), made up of a liquid crystal layer sealed in a gap between a pair of transparent substrates having an electrode formed on each of the inner surfaces thereof, facing each other and disposed in that order from the visible side, with an absorption-type polarizing film (12) disposed on the visible side of the first liquid crystal cell (16) and a reflection-type polarizing film (14) disposed on a side of the second liquid crystal cell (18), see Abstract. However, the display device disclosed by Masafumi et al. does not teach, or even suggest a "display assembly with two superposed contrast inversion display-devices" as recited in claims 1, 13, 20 and 21. In fact, the Masafumi et al. reference teaches that the first liquid crystal display cell (16) and the second liquid crystal cell (18) are disposed such that the display regions of the respective liquid crystal cells are "superimposed" on each other (col. 5, lines 6-10). As shown in Figure 1, these structures are not "superposed" cells in accordance with the present invention because there is nothing in the reference to teach, or even suggest, that they are in contact or in approximate

contact with one another. As suggested by Figure 1, Masafumi et al. schematically illustrate that cells (16) and (18) are separated from each other and not in contact or in approximate contact.

In addition, the Masafumi et al. reference teaches that "a conventional liquid crystal display panel used in electronic equipment other than a timepiece" can include an "inverse mode" (col. 1, line 58, to col. 2, line 22) and describes the operation of the "inverse mode" that those skilled in the art would recognize as the "inverse addressing" referred to in the present specification (page 3, lines 20-27). In accordance with the discussion of inverse addressing in the present specification, Masafumi et al. also point out that the "inverse mode" is not suitable for portable devices such as timepieces. Consequently, the Masafumi et al. reference stands in support of the proposition that those skilled in the art would not apply inverse addressing to a timepiece.

Conclusion

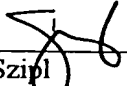
Applicant has shown that the rejection under 35 U.S.C. 103 of claims 1-4 and 7-12 as unpatentable over Applicant's Prior Art discussion is untenable and should be withdrawn because none of the prior art display assemblies, or modifications thereof, include or even suggest "a display assembly with two superposed contrast inversion display devices" as recited in claims 1, 13, 20 and 21. In addition, the Masafumi et al. reference does not make up this deficiency. Furthermore, the rejection against claims 20 and 21 is untenable and should be withdrawn because none of the prior art references teach, or even suggest, the feature wherein the "transparent substrates opposite the display cell and the valve are combined in a single transparent substrate."

For all of the above reasons, claims 1-4, 8-16 and 19-21 are in condition for allowance and a prompt notice of allowance is earnestly solicited.

Questions are welcomed by the below signed attorney of record for the Applicant.

Respectfully submitted,

GRIFFIN & SZIPL, PC



Joerg-Uwe Szipl
Reg. No. 31, 799

GRIFFIN & SZIPL, PC
Suite PH-1
2300 Ninth Street, South
Arlington, VA 22204
Telephone: (703) 979-5700
Facsimile: (703) 979-7429
Customer No.: 24203

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A

super-het-er-o-dyne (sōō/pər het/ər ə dīn/), *adj.* 1. noting or pertaining to a method of receiving radio signals in which the heterodyne process is used to lower the frequency of an incoming modulated wave and the wave is then amplified and demodulated. —*n.* 2. a superheterodyne receiver. [1920-25; SUPER(SONIC) + HETERODYNE]

super-high frequency (sōō/pər hī/ frē kwēnsē), *n.* any radio frequency between 3000 and 30,000 megahertz. *Abbrev.*: SHF [1940-45]

super-high-way (sōō/pər hī/wā, sōō/pər hī/wā/), *n.* a highway designed for travel at high speeds, having more than one lane for each direction of traffic; expressway. [1920-25, Amer.]

super-human (sōō/pər hyū/mən; often -yōō/), *adj.* 1. above or beyond what is human; having a higher nature or greater powers than humans have: a *superhuman* being. 2. exceeding ordinary human power, achievement, experience, etc.: a *superhuman* effort. [1625-35; < NL *superhominus*. See SUPER-, HUMAN] —*su/pər-hu-mən/i-ty* (-mən/i tē), *n.* —*su/pər-hu-mən-ness*, *n.* —*su/pər-hu-mən-ly*, *adv.*

super-im-pose (sōō/pər im pōz/), *v.t.*, -posed, -pos-ing. 1. to impose, place, or set over, above, or on something else. 2. to put or join as an addition (usu. fol. by *on* or *upon*). [1785-95] —*su/pər-im-pō-si/tion* (-pō zish/ən), *n.*

super-in-cum-bent (sōō/pər in kum/bənt), *adj.* 1. lying or resting on something else. 2. situated above; overhanging. 3. exerted from above. [1655-65; < L *superincumbens*, s. of *superincumbens*, prp. of *superincumbere* to lean over; see SUPER-, INCUMBENT] —*su/pər-in-cum-ben-cy*, *n.* —*su/pər-in-cum-bent-ly*, *adv.*

super-in-duce (sōō/pər in dōōs/, -dyōōs/), *v.t.*, -duced, -duc-ing. to bring in as an added feature, circumstance, etc. [1545-55; < L *superinducere*. See SUPER-, INDUCE] —*su/pər-in-duc-tion* (-duk/shən), *n.*

super-in-fec-tion (sōō/pər in lek/shən), *n.* infection by a parasitic microorganism during treatment for another infection. [1920-25]

super-in-tend (sōō/pər in tend/, sōō/prin-), *v.t.*, -tend-ed, -tend-ing. 1. to oversee and direct (work, processes, etc.). 2. to exercise supervision over (an institution, district, place, etc.). [1605-15; < LL *superintendere*. See SUPER-, INTEND]

super-in-tend-en-cy (sōō/pər in ten/dən sē, sōō/prin-), *n.* *pl.* -cies. 1. a district or place under a superintendent. 2. the position of a superintendent. 3. Also, *su/pər-in-tend-ence*, the act or process of superintending. [1590-1600; < ML *superintendentia*; see SUPERINTEND-, ENCY]

super-in-tend-ent (sōō/pər in ten/dant, sōō/prin-), *n.* 1. a person who oversees or directs some work, establishment, district, etc.: supervisor. 2. a person who is in charge of maintenance and repairs of an apartment house; custodian. —*adj.* 3. superintending. [1545-55; < ML *superintendent*, s. of *superintendens*, prp. of *superintendere* to SUPERINTEND; see -ENT]

super-ior (sə pēr/ē or sōō-), *adj.* 1. higher in station, rank, degree, etc. 2. above the average in excellence, merit, intelligence, etc. 3. of higher grade or quality. 4. greater in quantity or amount. 5. showing a consciousness or feeling of being better than or above others. 6. not yielding or susceptible (usu. fol. by *to*): *superior to temptation*. 7. higher in place or position: *superior ground*. 8. Bot. a. situated above some other organ. b. (of a calyx) seeming to originate from the top of the ovary. c. (of an ovary) free from the calyx. 9. Anat. (of an organ or part) a. higher in place or position; situated above another. b. being toward the head. Compare *inferior* (def. 5). 10. Astron. a. (of a planet) having an orbit outside that of the earth, as Mars and Jupiter. b. (of a conjunction of a superior planet) taking place between the sun and the planet. 11. written or printed high on a line of text, as the "2" in a/b: *super-script*. Compare *inferior* (def. 7). —*n.* 12. one superior to another. 13. super-script. 14. the head of a monastery, convent, or the like. [1550-1600; ME (adj.) < L comp. of *superius* situated above (adj. der. of *super*; see SUPER-); cf. -er-] —*su-pē-ri-or-ly*, *adv.*

super-ior (sə pēr/ē or sōō-), *n.* Lake, a lake in the N central U.S. and Canada: the northernmost of the Great Lakes; the largest body of fresh water in the world. 31,820 sq. mi. (82,415 sq. km).

super-ior court, *n.* 1. the court of general jurisdiction in many states of the U.S., often intermediate between trial courts and the chief appellate court. 2. any court having jurisdiction over other courts. [1680-90]

super-ior-i-ty (sə pēr/ē ōr/ē tē, -or/, sōō-), *n.* the quality or condition of being superior. [1520-30; < ML *superioritas*. See SUPERIOR-, -ITY]

superiority complex, *n.* an exaggerated feeling of one's own superiority. [1920-25]

super-la-cent (sōō/pər jās/ənt), *adj.* lying above or upon something else. [1600-10; < L *superjacent*, s. of *superjacens*, prp. of *superjacere* to rest upon. See SUPER-, SUBJACENT]

super-jet (sōō/pər jēt/), *n.* a jet aircraft, esp. a large one, capable of supersonic flight. [1960-65]

super-, *superlative*.

super-la-tive (sə pūr/la tiv, sōō-), *adj.* 1. of the highest kind or order. 2. of or designating the highest degree of comparison of adjectives and adverbs, used to show the extreme or greatest in quality, quantity, or intensity, as in *smallest*, *best*, and *most carefully*. the superlative forms of *well*, *good*, and *carefully*. Compare *comparative* (def. 4), *positive* (def. 1). —*n.* 3. a superlative person or thing. 4. the utmost degree; acme. *Abbrev.*: *sup.* [1550-1600; ME < OF < LL *superlātivus* = L *superlātus*, ptp. of *superire* to carry over, to a higher degree (SUPER-, SUPER- + *terre* to rise) + *-tus* -ive] —*su-pē-ri-la-tive-ly*, *adv.* —*su-pē-ri-la-tive-ness*, *n.* —*su-pē-ri-la-tive-ry* (sōō/pər lōō/nā rē) also *su-pē-ri-lu/nar*, *adj.* 1. situated above or beyond the moon. 2. celestial, rather than earthly. [1605-15; SUPER- + (SUB)LUNARY]

super-man (sōō/pər man/), *n.* *pl.* -men. 1. a person of extraordinary or superhuman powers. 2. an ideal superior being conceived by Nietzsche as attaining happiness and dominance through creativity and integrity. 3. one who prevails by virtue of being a ruthless egotist of super-

rior strength, cunning, and force of will. [1900-05; trans. of G. *Übermensch*] —*Usage*. See -MAN.

super-mar-ket (sōō/pər mār/kit), *n.* 1. a large self-service retail store that sells food and other household goods. 2. any business or company offering an unusually wide range of goods or services: a *financial super-market*. [1920-25, Amer.]

super-nal (sōō pūr/nl), *adj.* 1. heavenly, celestial, or divine. 2. lofty; of more than human excellence, powers, etc. 3. being on high or in the sky or visible heavens. [1475-85; < MF < L *supernus* upper + *-alis* -AL] —*su-pər-nal-ly*, *adv.*

super-na-tant (sōō/pər nāt/nt), *adj.* floating above or on the surface. [1655-65; < L *supernatant*, s. of *supernatans*, prp. of *supernatāre* to swim above. See SUPER-, NATANT]

super-na-tion-al (sōō/pər nash/ə nl), *adj.* tending to involve, or extending authority over, more than one nation; international. [1910-15] —*su-pər-na-tion-al-ism*, *n.* —*su-pər-na-tion-al-ly*, *adv.*

super-nat-u-ral (sōō/pər nach/ər əl, -nach/rəl), *adj.* 1. of, pertaining to, or being above or beyond what is natural or explainable by natural law. 2. of, pertaining to, or attributed to God or a deity. 3. of a supernatural degree; preternatural. 4. pertaining to or attributed to ghosts, goblins, or other unearthly beings; eerie; occult. —*n.* 5. a being, place, object, occurrence, etc., considered as supernatural or of supernatural origin. 6. the supernatural, a supernatural being, behavior, and occurrences collectively. b. supernatural forces and the supernatural plane of existence. [1520-30; < ML *supernaturalis*. See SUPER-, NATURAL] —*su-pər-nat-u-ral-ly*, *adv.* —*su-pər-nat-u-ral-ness*, *n.* —*Syn.* See MIRACULOUS.

super-nat-u-r-al-ism (sōō/pər nach/ər ə liz/əm, -nach/rə/), *n.* 1. supernatural character or agency. 2. belief in the doctrine of supernatural or divine agency as manifested in the world. [1790-1800] —*su-pər-nat-u-r-al-ist*, *n.* —*su-pər-nat-u-r-al-is-tic*, *adj.*

super-nor-mal (sōō/pər nōr/məl), *adj.* 1. in excess of the normal or average. 2. lying beyond normal or natural powers of comprehension. [1865-70] —*su-pər-nor-mal-i-ty*, *n.* —*su-pər-nor-mal-ly*, *adv.*

super-no-va (sōō/pər nō/və), *n.* *pl.* -vae, -vae (-vē). a nova millions of times brighter than the sun. [1925-30]

super-num-er-ary (sōō/pər nōō/mə rēr/ē, -nyōō/), *adj.* *n.* *pl.* -ar-ies. —*adj.* 1. being in excess of the usual, proper, or prescribed number; additional; extra. 2. associated with a regular body or staff as an assistant or substitute in case of necessity. —*n.* 3. a supernumerary or extra person or thing. 4. a supernumerary official or employee. 5. a person who appears in a play, opera, etc., without speaking lines or as part of a crowd; extra. [1595-1605; < LL *supernumerarius*. See SUPER-, NUMERARY]

super-or-der (sōō/pər ōr/dər), *n.* Biol. a category of related orders within a class or subclass. [1885-90]

super-or-di-nate (*adj.*, *n.* sōō/pər ōr/dn it; v. -āt/), *adj.* *n.* *v.* -nat-ed, -nat-ing. —*adj.* 1. of higher degree in condition or rank. —*n.* 2. a superordinate person or thing. 3. a word that denotes a general class under which a set of subcategories is subsumed: *Child* is the superordinate of *girl* and *boy*. Compare *HYPONYM*. —*v.t.* 4. to elevate to superordinate position. [1610-20; SUPER- + (SUB)ORDINATE]

super-or-gan-ic (sōō/pər ōr/gan/ik), *adj.* of or pertaining to the structure of cultural elements within society conceived as independent of and superior to the individual members of society. [1860-65]

super-ov-u-late (sōō/pər ov/yə lāt/, -ōv/yə/), *v.t.*, -lat-ed, -lat-ing. (of humans, domestic animals, etc.) to produce more than the normal number of ova at one time. [1960-65] —*su-pər-ov-u-la-tion*, *n.*

super-ox-ide (sōō/pər ōk/sid, -sid), *n.* a compound containing the univalent ion O₂. [1840-50]

super-pa-tri-ot (sōō/pər pā/trē ōt, sōō/pər pā/-; esp. Brit. -pā/-, -pā/-), *n.* a person who is patriotic to an extreme. [1915-20] —*su-pər-pā-tri-ot-ic* (-ōt/ik), *adj.* —*su-pər-pā-tri-ot-i-cal-ly*, *adv.* —*su-pər-pā-tri-ot-ism*, *n.*

super-phos-phate (sōō/pər fos/fāt), *n.* 1. a mixture of calcium acid phosphate and calcium sulfate, used chiefly as a fertilizer. 2. a mixture prepared with phosphoric acid and containing about 45 percent of soluble phosphates, used as a fertilizer. [1790-1800]

super-phy-lum (sōō/pər fi/ləm), *n.* *pl.* -la (-lə). Biol. a category of related phyla within a kingdom.

super-phys-i-cal (sōō/pər fiz/i kəl), *adj.* above or beyond what is physical; hyperphysical. [1595-1605]

super-plas-tic (sōō/pər plas/tik), *adj.* (of some metals and alloys) having the capacity to undergo extreme deformation at high temperatures. [1945-50] —*su-pər-plas-tic-i-ty* (-tis/i tē), *n.*

super-pose (sōō/pər pōz/), *v.t.*, -posed, -pos-ing. 1. to place above or upon something else, or one upon another. 2. *Geom.* to place (one figure) in the space occupied by another, so that the two figures coincide throughout their whole extent. [1815-25; < F *superposer*. See SUPER-, POST] —*su-pər-pos-a-ble*, *adj.*

super-po-si-tion (sōō/pər pō zish/ən), *n.* the order in which sedimentary strata are superposed one above another. [1790-1800; < F; see SUPER-, POSITION]

super-pow-er (sōō/pər pou/ər), *n.* 1. a very powerful nation, esp. one with significant interests and influence outside its own region. 2. power greater in scope or magnitude than that which is considered natural or has previously existed. 3. power, esp. mechanical or electric power, on an extremely large scale secured by the linking together of a number of separate power systems. [1940-45] —*su-pər-pow-er-ed*, *adj.*

super-sat-u-rate (sōō/pər sach/ə rāt/), *v.t.*, -rat-ed, -rat-ing. to increase the concentration of a solution beyond saturation; saturate abnormally. [1750-60] —*su-pər-sat-u-ra-tion*, *n.*

super-saur (sōō/pər sōr/), *n.* a huge saurpoid dinosaur of the genus

su/pər-saf/, -ly, -adv.

su/pər-saf/-ness, n.

su/pər-saf/-ty, n.

su/pər-sales/man, n. pl. -men.

su/pər-sales/man-ship, n.

su/pər-school, n.

su/pər-screen/, n. -adj.

su/pər-sell/, n.

su/pər-sell/er, n.

su/pər-sen-si-ti-za-tion, n.

su/pər-sen-si-tize/, v. t. -ized, -izing.

su/pər-sen-si-tiz/er, n.

su/pər-sen-si-ty, n. pl. -ries.

su/pər-sharp/, -adj.

su/pər-size/, n. -adj.

su/pər-sized/, -adj.

su/pər-sleuth/, n.
